

Claims

- [c1] 1.A double-wall blade (1) for a turbine, particularly for aeronautical applications; the blade comprising a streamlined lateral wall (20) extending along an axis (10), surrounding said axis (10), and in turn comprising an inner wall (28) and an outer wall (29) facing and integral with each other; and channeling means (34) for a cooling fluid, comprising an intake cavity (15) for intake of said cooling fluid into said blade (1), and a number of cooling ducts (33) formed between said inner (28) and said outer (29) wall and tangentially to said inner (28) and said outer (29) wall; characterized in that said cooling ducts (33) extend in respective directions crosswise to said axis (10) and parallel to one another, are each airtight with respect to an adjacent duct (33), and have respective intakes (38,39) separate from one another and communicating with said intake cavity (15) so as to each guide a relative flow of said cooling fluid, which does not mix with the flow in the adjacent duct (33).
- [c2] 2.Blade according to claim 1, characterized in that said cooling ducts (33) are separated and made airtight with respect to one another by baffles (53) formed in one piece with said inner (28) and said outer (29) wall.
- [c3] 3.Blade according to claim 2, characterized in that said baffles (32) are disposed on respective planes at right-angles to said axis (10).
- [c4] 4.Blade according to claim 1, characterized in that said channeling means (34) additionally comprise means (44) for regulation of the flow rate in order to diversify the flow rates of said flows from one another.
- [c5] 5.Blade according to claim 4, characterized in that said means (44) for regulation of the flow rate comprise for each said intake (38,39) a corresponding hole (45,46) which has a cross-section of passage calibrated in order to put the corresponding said cooling duct (33) into communication with said intake cavity (15).
- [c6] 6.Blade according to claim 5, characterized in that said means (44) for regulation of the flow rate are interposed between said intake cavity (15) and said intakes (38,39).

- [c7] 7.Blade according to claim 6, characterized in that said means (44) for regulation of the flow rate comprise an additional element (44) which is connected integrally to said inner wall (28); said holes (45,46) being provided in said additional element (44).
- [c8] 8.Blade according to claim 4, characterized in that said intake cavity (15) is an axial cavity which is delimited by said inner wall (28); said intakes (38,39) being provided through said inner wall (28) along at least one axial row.
- [c9] 9.Blade according to claim 8, characterized in that said streamlined lateral wall (20) has a leading edge (24); a trailing edge (25); and a side (26) which is subjected to pressure and a side (27) which is subjected to low pressure which extend between said leading edge (24) and the trailing edge (25); the axial row of said intakes (38,39) being provided at said leading edge (24).
- [c10] 10.Blade according to claim 9, characterized in that said cooling ducts (33) comprise first ducts (36) provided along said side (26) which is subjected to pressure and second ducts (37) provided along said side (27) which is subjected to low pressure; means (35) for separation being provided between said first duct (36) and second duct (37) in order to define first intakes (38) in said first duct (36) and second intakes (39) in said second duct (37).
- [c11] 11.Blade according to claim 10, said means (44) for regulation of the flow rate comprising first (45) and second (46) holes which have a calibrated cross-section of passage and are each associated with a respective corresponding said first intake (38) and with a corresponding said second intake (39).
- [c12] 12.Blade according to claim 1, characterized in that said streamlined lateral wall (20) can be accommodated in an annular duct (3) of said turbine, and in that it comprises a pair of end walls (21)(22) which are disposed at the opposite axial ends of said streamlined lateral wall (20), transversely to said axis (10) and in use can be connected to respective platforms (4)(5) which delimit said annular duct (3); said channeling means (34) comprising at least one opening (64) which is provided through at least one said end wall (21)(22).
- [c13] 13.Blade according to claim 12, characterized in that said channeling means

(34) comprise a number of said openings (64) for each said end wall (21)(22).

- [c14] 14.Blade according to claim 12, characterized in that said openings (64) communicate with said intake cavity (15) through said cooling ducts (33).
- [c15] 15.Blade according to claim 14, characterized in that said channeling means (34) comprise a first chamber (16) delimited by said end walls (21)(22), by said inner wall (22) and by a wall (17) which separates said intake cavity (15); said first chamber (16) connecting said cooling ducts (33) and said openings (64).
- [c16] 16.Blade according to claim 1, characterized in that said channeling means (34) comprise at least one passage (55) which is provided in a tail portion (56) of said blade (1) and opens along a trailing edge (25) of said streamlined lateral wall (20); said cooling ducts (33) having respective outlets (54) which open into said passage (55).
- [c17] 17. Blade according to claim 16, characterized in that said passage (55) is delimited by said outer wall (29) and accommodates a number of heat exchange elements (60) which project from said outer wall (29).
- [c18] 18.Blade according to claim 15, characterized by comprising a second chamber (66) formed in an intermediate position between said intake cavity (15) and said first chamber (16); each said cooling duct (33) comprising a relative first portion (69,70) having an outlet (71,72) terminating in said second chamber (66), and a relative second portion (73,74) having an intake (75,76) terminating in said second chamber (66).
- [c19] 19. Blade according to claim 1, characterized in that said channeling means (34) comprise turbulence generator means (51;52) which are disposed in said cooling ducts (33).
- [c20] 20.Blade according to claim 19, characterized in that said turbulence generator means comprise a number of ribs (51) which are supported by at least one said inner wall (28) or outer wall (29) and are transverse to a direction of advance (S) of said flows.
- [c21] 21.Blade according to claim 20, characterized in that said turbulence generator

means comprise a number of incisions (52) which are provided in at least one said inner wall (28) or outer wall (29) and are transverse to a direction of advance (S) of said flows.

[c22] 22.Blade according to claim 1, characterized in that said inner wall (28) and outer wall (39) are spaced from one another by a distance which is equal to the thickness of at least one said inner wall (28) or outer wall (29).

[c23] 23.Blade according to claim 1, characterized in that it comprises pivoting portions (11,12) which are disposed on opposite axial parts of said streamlined lateral wall (20) in order to rotate in use around said axis (10).